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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,462	03/24/2006	Takuya Kinoshita	NNA-241-B	2578

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EXAMINER
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CULLEN, SEAN P

ART UNIT	PAPER NUMBER
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1725

NOTIFICATION DATE	DELIVERY MODE
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03/03/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/573,462	<b>Applicant(s)</b> KINOSHITA ET AL.	
	<b>Examiner</b> Sean P. Cullen, Ph.D.	<b>Art Unit</b> 1725	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2011.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-15,17,18 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-15,17,18 and 21-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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## **DETAILED ACTION**

### **Continued Examination Under 37 CFR 1.114**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 13, 2011 has been entered.

### **Status of Claims**

2. **Claims 1, 3-15, 17, 18 and 21-24** are pending.
3. **Claims 2, 16, 19 and 20** are canceled.

### **Claim Rejections - 35 USC § 112**

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. **Claims 1, 12-14, 17 and 21-24** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

**Claims 1, 12-14 and 17** recite a discharge circuit/means for balancing printed on one of the positive-electrode layer, the negative-electrode layer and electrolyte layer; and a second pair of conductive bodies, wherein one of the second pair of conductive bodies is in an adjacent layer to the discharge circuit/means for balancing and another of the second pair is in another adjacent layer to the discharge circuit/means for balancing. The original disclosure does not support these claim limitations when the claims are considered as a whole. The original disclosure supports a discharge circuit/means for balancing printed on one of the positive-electrode layer, the negative-electrode layer and electrolyte layer and one of the second pair of conductive bodies is in an adjacent layer to the discharge circuit/means for balancing (Fig. 2, [0041]-[0049]). The original disclosure does not support another of the second pair is in another adjacent layer to the discharge circuit/means for balancing. For a discharge circuit/means for balancing printed on one of the positive-electrode layer or the negative-electrode layer, the adjacent layers are the electrolyte layer and the collector. The one of the second pair of conductive bodies or the another of the second pair of conductive bodies in an/another adjacent layer to the discharge circuit/means for balancing would be in the collector. There is no support for the conductive bodies in the collector. The collector is described as being printed on the whole of the surface of another layer (Fig. 2, [0044]). Therefore, the original disclosure does not support a discharge circuit/means for balancing printed on one of the positive-electrode layer, the negative-electrode layer and electrolyte layer; and a second pair of conductive bodies, wherein one of the second pair of conductive bodies is in an adjacent layer to the discharge circuit/means for balancing and another of the second pair is in another adjacent layer to the discharge circuit/means for balancing

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**Claims 12 and 21-24** recite “a conductive sealing material printed on an outermost periphery of each of the positive-electrode layer, the negative-electrode layer and electrolyte layer.” This limitation is not supported by the original disclosure. The original disclosure supports an insulant (206, Fig. 2, [0040]-[0046]) or a nonconductive sealing agent (502, Figs. 11 and 12, [0059]-[0060]). The original disclosure supports a conductive sealing agent printed on the periphery of luminous elements (501, Figs. 11 and 12, [0059]-[0060]). Therefore, the original disclosure does not support “a conductive sealing material printed on an outermost periphery of each of the positive-electrode layer, the negative-electrode layer and electrolyte layer.”

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. **Claims 1, 13, 14 and 17** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claim 1** recites the limitation "the layers" in lines 18-19. There is insufficient antecedent basis for this limitation in the claim.

**Claim 13** recites the limitation "the layers" in lines 18-19. There is insufficient antecedent basis for this limitation in the claim.

**Claim 14** recites the limitation "the layers" in lines 20-21. There is insufficient antecedent basis for this limitation in the claim.

**Claim 13** recites the limitation "the layers" in line 18. There is insufficient antecedent basis for this limitation in the claim.

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**Claim 17** recites the limitation "the layers" in line 18. There is insufficient antecedent basis for this limitation in the claim.

### **Claim Rejections - 35 USC § 103**

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. **Claims 1, 3, 5, 11-15, 17 and 21-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagayama et al. (U.S. 2005/0208347 A1).

Regarding **claim 1**, Nagayama et al. discloses a bipolar battery cell (10) comprising:

- a plurality of electric cells (20), each electric cell comprising:
  - a bipolar electrodes (30), including
  - a collector (22) having
    - a positive-electrode layer (28) on one surface and
    - a negative-electrode layer (26) on an opposing surface (Fig. 3, [0034]);
  - an electrolyte layer (27) that exchange ions between the positive-electrode layer (28) and the negative electrode layer (26, Fig. 4);
  - a discharge circuit (32 and 33) printed in one of the positive-electrode layer (28), the negative-electrode layer (26) and electrolyte layer (27) within each electric cell (40, Fig. 4)

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- the discharge circuit (32 and 33) configured within each bipolar electrode (30) to electrically balance charged conditions ([0037]-[0039]) of adjacent electric cells (40);
- a first pair of conductive bodies (34) located in the one of the positive-electrode layer (28), the negative-electrode layer (26) and electrolyte layer (27) having the discharge circuit (32 and 33, Fig. 4),
- wherein one of the first pair (34) is in contact with one side of the discharge circuit (32 and 33, Fig. 4) and another of the first pair (34) is in contact with an opposing side of the discharge circuit (32 and 34, Fig. 4); and
- a second pair of conductive bodies (34),
- wherein one of the second pair of conductive bodies (34) is in an adjacent layer to the discharge circuit (32 and 33, Fig. 4) and
- another one of the second pair (34) is in another adjacent layer to the discharge circuit (32 and 33, Fig. 4) such that
- each pair of the second pair of conductive bodies (34) is vertically aligned with a different one of the first pair of conductive bodies (34) when the layers are stacked (Fig. 4).

Regarding **claim 3**, Nagayama et al. discloses all claim limitations set forth above and further discloses a bipolar battery cell:

- a contact area between the discharge circuit (32 and 33) and the electric cell within which the discharge circuit is located (30) that is more than 0.06 mm<sup>2</sup> per

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battery capacity of the bipolar battery of 1 Ah (see 0.2 cm x 0.1 cm, [0097]; 202 mAh, [0104]; 1000 mm<sup>2</sup>/Ah).

Regarding **claim 5**, Nagayama et al. discloses all claim limitations set forth above and further discloses a bipolar battery cell:

- wherein the discharge circuit (32 and 33) includes a zener diode layer (32).

Regarding **claim 11**, Nagayama et al. discloses all claim limitations set forth above and further discloses a bipolar battery cell:

- further comprising a sheathing material (16) that covers and seals the bipolar electrodes (30), the electrolyte layers (27), and the discharge circuit (32 and 33, Fig. 2).

Regarding **claim 12**, Nagayama et al. discloses all claim limitations set forth above and further discloses a bipolar battery cell:

- further comprising a conductive sealing material (36, [0036]) printed on an outermost periphery of each of the positive-electrode layer (28), the negative-electrode layer (26) and electrolyte layer (27).

Regarding claim 13, Nagayama et al. discloses an assembled battery (70) comprising:

- a plurality of bipolar battery cells (10, Fig. 15C),
- wherein each bipolar battery cell (10) comprises:
  - a plurality of electric cells (20) each electric cell comprising:
  - a laminated bipolar electrodes (30) including
    - a collector (22) having
      - a positive-electrode layer (28) on one surface and

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- a negative-electrode layer (26) on an opposing surface (Fig. 3, [0034]);
- a electrolyte layer (27) that exchange ions between the positive-electrode layer (28) and the negative electrode layer (26, Fig. 4);
- a discharge circuit (32 and 33) printed on one or more of the positive-electrode layer (28), the negative-electrode layer (26) and electrolyte layer (27, Fig. 4) that electrically balances charged conditions ([0037]-[0039]) of adjacent bipolar electrodes (30);
- a first pair of conductive bodies (34) located in the one of the positive-electrode layer (28), the negative-electrode layer (26) and electrolyte layer (27) having the discharge circuit (32 and 33, Fig. 4),
- wherein one of the first pair (34) is in contact with one side of the discharge circuit (32 and 33, Fig. 4) and another of the first pair (34) is in contact with an opposing side of the discharge circuit (32 and 34, Fig. 4);
- and
- a second pair of conductive bodies (34),
- wherein one of the second pair of conductive bodies (34) is in an adjacent layer to the discharge circuit (32 and 33, Fig. 4) and
- another one of the second pair (34) is in another adjacent layer to the discharge circuit (32 and 33, Fig. 4) such that

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- each pair of the second pair of conductive bodies (34) is vertically aligned with a different one of the first pair of conductive bodies (34) when the layers are stacked (Fig. 4).

Regarding **claim 14**, Nagayama et al. discloses a vehicle (80) comprising:

- a controller (see control circuit, [0083]); and
- an assembled bipolar battery (70) comprising
  - a plurality of bipolar battery cells (10), wherein each bipolar battery cell (10) comprises:
    - a plurality of electric cells (20), each electric cell (20) comprising
      - a bipolar electrode (30) including
      - a collector (22) having
        - a positive-electrode layer (28) on one surface and
        - a negative-electrode layer (26) on an opposing surface (Fig. 3, [0034]);
    - an electrolyte layer (27) that exchange ions between the positive-electrode layer (28) and the negative electrode layer (26, Fig. 4);
    - a discharge circuit (32 and 33) printed on one or more of the positive-electrode layer (28), the negative electrode layer (26) and electrolyte layer (27) that electrically balances charged conditions ([0037]-[0039]) of adjacent bipolar electrodes (30)

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- a first pair of conductive bodies (34) located in the one of the positive-electrode layer (28), the negative-electrode layer (26) and electrolyte layer (27) having the discharge circuit (32 and 33, Fig. 4),
- wherein one of the first pair (34) is in contact with one side of the discharge circuit (32 and 33, Fig. 4) and another of the first pair (34) is in contact with an opposing side of the discharge circuit (32 and 34, Fig. 4); and
- a second pair of conductive bodies (34),
- wherein one of the second pair of conductive bodies (34) is in an adjacent layer to the discharge circuit (32 and 33, Fig. 4) and
- another one of the second pair (34) is in another adjacent layer to the discharge circuit (32 and 33, Fig. 4) such that
- each pair of the second pair of conductive bodies (34) is vertically aligned with a different one of the first pair of conductive bodies (34) when the layers are stacked (Fig. 4).

Regarding **claim 15**, Nagayama et al. discloses a method of forming a bipolar battery cell (10) each bipolar battery cell (10) comprising a plurality of electric cells (20) comprising:

- stacking a collector (22) having
  - positive-electrode layer (28) on one surface of the collector and
  - a negative-electrode layer (26) on an opposing surface (Fig. 3, [0034]) of the collector;

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- with an electrolyte layer (27) that exchange ions between the positive-electrode layer (28) and the negative-electrode layer (26, Fig. 4),
- the electrolyte layer (27) having a discharge circuit (32 and 33) therein,
- wherein the discharge circuit electrically balances charged conditions ([0037]-[0039]) of adjacent bipolar electrodes (30) to form each electric cell (20) of the plurality of electric cells (10); and
- a conductive body (34) on one surface of the collector (22B) and
- another conductive body (34) on an opposing surface of the collector (22B);
- wherein the discharge circuit (32 and 33) is contacted on opposing sides with additional conductive bodies (34) in the electrolyte layer (27); and
- wherein stacking the collector (22B) with the positive-electrode layer (28) and negative-electrode layer (26) with the electrolyte layer (27) occurs such that each of the conductive bodies (34) in the electrolyte layer aligns with a different conductive body (34) in adjacent layers (Fig. 4).

Regarding **claim 17**, Nagayama et al. discloses a bipolar battery cell (10) comprising:

- a plurality of electric cells (20), each electric cell (20) comprising:
  - a bipolar electrode (30) including
    - a collector (22) having
      - a positive-electrode layer (28) on one surface and
      - a negative-electrode layer (26) on an opposing surface (Fig. 3, [0034]);

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- a means for exchanging ions (27) between the positive-electrode layer (28) and the negative-electrode layer (26, Fig. 4); and
- a means for balancing the bipolar battery cell (32 and 33) by electrically balances charged conditions ([0037]-[0039]) of adjacent bipolar electrodes (30),
- the means for balancing (32 and 33) located on one of the positive-electrode layer (28), the negative-electrode layer (26) and electrolyte layer (27, Fig. 4)
- a first pair of conductive bodies (34) located in the one of the positive-electrode layer (28), the negative-electrode layer (26) and electrolyte layer (27) having the discharge circuit (32 and 33, Fig. 4),
- wherein one of the first pair (34) is in contact with one side of the discharge circuit (32 and 33, Fig. 4) and another of the first pair (34) is in contact with an opposing side of the discharge circuit (32 and 34, Fig. 4); and
- a second pair of conductive bodies (34),
- wherein one of the second pair of conductive bodies (34) is in an adjacent layer to the discharge circuit (32 and 33, Fig. 4) and
- another one of the second pair (34) is in another adjacent layer to the discharge circuit (32 and 33, Fig. 4) such that

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- each pair of the second pair of conductive bodies (34) is vertically aligned with a different one of the first pair of conductive bodies (34) when the layers are stacked (Fig. 4).

Regarding **claim 21**, modified Nagayama et al. discloses all claim limitations set forth above and further discloses an assembled battery:

- wherein the laminated bipolar electrode further includes a conductive sealing material (36, [0036]) printed on an outermost periphery of each of the positive-electrode layer (28), the negative-electrode layer (26) and electrolyte layer (27).

Regarding **claim 22**, modified Nagayama et al. discloses all claim limitations set forth above and further discloses a vehicle:

- wherein each electric cell further comprises a conductive sealing material (36, [0036]) printed on an outermost periphery of each of the positive-electrode layer (28), the negative-electrode layer (26) and electrolyte layer (27).

Regarding **claim 23**, modified Nagayama et al. discloses all claim limitations set forth above and further discloses a method:

- providing a conductive sealing material (36, [0036]) on an outermost periphery of each of the positive-electrode layer (28), the negative-electrode layer (26) and electrolyte layer (27) prior to stacking.

Regarding **claim 24**, modified Nagayama et al. discloses all claim limitations set forth above and further discloses a method:

- wherein each electric cell further comprises a conductive sealing material (36, [0036]) printed on an outermost periphery of each of the positive-electrode layer (28), the negative-electrode layer (26) and electrolyte layer (27).

10. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagayama et al. (U.S. 2005/0208347 A1) as applied to claim 1 above, and further in view of Einthoven et al. (U.S. 2003/0205775 A1).

Regarding **claim 4**, Nagayama et al. discloses all claim limitations set forth above and further discloses a bipolar battery cell:

- wherein a threshold of a discharge voltage in the discharge circuit is set between 3.6 V-4.1 V (see 4 V, [0039]), and

Nagayama et al. does not explicitly disclose:

- wherein a doping concentration is set between  $10^{17}$ - $10^{18}$   $\text{cm}^{-3}$ , and
- the thickness of a depletion layer is set between 0.1  $\mu\text{m}$ -1.0  $\mu\text{m}$  so as to set a breakdown voltage of a PN-junction of the discharge circuit the same as to the threshold.

Einthoven et al. discloses a voltage suppression device (abstract) with a doping concentration  $10^{17}$ - $10^{18}$   $\text{cm}^{-3}$  (see  $2 \times 10^{17}$ - $2 \times 10^{18}$   $\text{cm}^{-3}$ , [0051]) and the thickness of a depletion layer is set between 0.1  $\mu\text{m}$ -1.0  $\mu\text{m}$  (see 0.2  $\mu\text{m}$ , [0035]) to control the breakdown voltage of the device [0048]. Nagayama et al. and Einthoven et al. are analogous art because they are directed to voltage suppression devices (solid state semiconductor). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the bipolar battery

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cell of Nagayama et al. using the voltage suppression device of Einthoven to control the breakdown voltage.

11. **Claims 6-10 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagayama et al. (U.S. 2005/0208347 A1) as applied to claims 1 above, and further in view of Horie et al. (U.S. 2001/0019794 A1).

Regarding **claims 6-10 and 18**, Nagayama et al. discloses all claim limitations set forth above and further discloses a bipolar battery cell:

- further comprising a sheathing material (16) that covers and seals the bipolar electrodes (30), the electrolyte layers (27) and the discharge circuit (32 and 33, Fig. 2)
- wherein the discharge circuit (32 and 33) comprises a voltage balancing circuit (32 and 33, [0037]-[0039]).

Nagayama et al. does not explicitly disclose:

- wherein the discharge circuit includes a luminescent device.
- further comprising a light guiding device arranged between the luminescent device and an end of the battery cell.
- further comprising a light sensor that responds to light emitted from the relevant luminescent device.
- wherein the discharge circuit includes a constant current circuit.
- further comprising a sheathing material that covers and seals the light sensor.

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Horie et al. discloses a bipolar battery cell (see cell group of a battery, abstract) wherein the discharge circuit (1) includes a luminescent device (see luminescent element, Fig. 1); further comprising a light guiding device (12) arranged between the luminescent device (11) and an end of the battery cell (Fig. 8); further comprising a light sensor (4) that responds to light emitted from the relevant luminescent device (11, [0065]); wherein the discharge circuit (1) includes a constant current circuit (20, Fig. 9A); wherein the discharge circuit (1) includes a constant current circuit (20, Fig. 9A); and wherein the discharge circuit comprises an abnormal voltage detecting circuit (4 and 12) to sense the voltage of the battery cells without the need of complex circuitry and reduce the current consumption of the discharge circuit [0010] to increase the energy density and efficiency of the battery. Nagayama et al. and Horie et al. are analogous art because they are directed to bipolar battery cell assemblies. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the bipolar battery cell of Nagayama et al. with the luminescent device, light guiding device and light sensor of Horie et al. to sense the voltage of the battery cells without the need of complex circuitry and reduce the current consumption of the discharge circuit to increase the energy density and efficiency of the battery.

### **Response to Arguments**

12. Applicant's arguments filed January 13, 2011 have been fully considered but they are not persuasive.

Regarding applicants' argument that Nagayama et al. fails to disclose a first pair of conductive bodies located in the one of the positive-electrode layer, the negative-electrode layer

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and electrolyte layer having the discharge circuit, wherein one of the first pair is in contact with one side of the discharge circuit and another of the first pair is in contact with an opposing side of the discharge circuit; and a second pair of conductive bodies, wherein one of the second pair of conductive bodies is in an adjacent layer to the discharge circuit and another one of the second pair is in another adjacent layer to the discharge circuit that each pair of the second pair of conductive bodies is vertically aligned with a different one of the first pair of conductive bodies when the layers are stacked. Nagayama et al. discloses a first pair of conductive bodies (34) located in the one of the positive-electrode layer (28), the negative-electrode layer (26) and electrolyte layer (27) having the discharge circuit (32 and 33, Fig. 4), wherein one of the first pair (34) is in contact with one side of the discharge circuit (32 and 33, Fig. 4) and another of the first pair (34) is in contact with an opposing side of the discharge circuit (32 and 34, Fig. 4); and a second pair of conductive bodies (34), wherein one of the second pair of conductive bodies (34) is in an adjacent layer to the discharge circuit (32 and 33, Fig. 4) and another one of the second pair (34) is in another adjacent layer to the discharge circuit (32 and 33, Fig. 4) such that each pair of the second pair of conductive bodies (34) is vertically aligned with a different one of the first pair of conductive bodies (34) when the layers are stacked (Fig. 4).

### **Conclusion**

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fukuzawa et al. (JP 2004055294 A, see machine translation).

Fukuzawa et al. discloses a bipolar battery cell (100) comprising a plurality of electric cells (40), each electric cell comprising a bipolar electrodes (10), including a collector (12)

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having a positive-electrode layer (14) on one surface and a negative-electrode layer (16) on an opposing surface (Fig. 1); an electrolyte layer (20) that exchange ions between the positive-electrode layer (14) and the negative electrode layer (16, Fig. 1); a discharge circuit (50) printed in one of the positive-electrode layer (14), the negative-electrode layer (16) and electrolyte layer (20) within each electric cell (40, Fig. 5), the discharge circuit (50) configured within each bipolar electrode (10) to electrically balance charged conditions of adjacent electric cells (40).

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Cullen, Ph.D. whose telephone number is 571-270-1251. The examiner can normally be reached on Monday thru Thursday 6:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on 571-272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. P. C./

Examiner, Art Unit 1725

/Basia Ridley/

Supervisory Patent Examiner, Art Unit 1725